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CONGRÈS GÉOLOGIQUE INTERNATIONAL

XII^e SESSION, CANADA, 1913.

(FIRST CIRCULAR)

VICTORIA MEMORIAL MUSEUM,
OTTAWA, CANADA,
MAY 1ST, 1912.

The International Geological Congress, on the joint invitation of the Government of Canada, the Provincial Governments, the Department of Mines, and the Canadian Mining Institute, will hold its twelfth meeting in Canada during the summer of 1913.

For purposes of organisation, a meeting of representatives from various scientific bodies of Canada was held in Toronto, Ontario, on December 2nd, 1910.

Honorary President.

Field Marshal, His Royal Highness the Duke of Connaught, Governor General of the Dominion of Canada, has graciously consented to become Honorary President.

Executive Committee.

The following gentlemen have been appointed an executive committee:—

President.—Frank D. Adams, D.Sc., F.R.S.,
Dean of the Faculty of Applied Science and Logan Professor of Geology, McGill University, Montreal.

General Secretary.— R. W. Brock, M.A., F.R.S.C.,
Director of the Geological Survey of Canada, Ottawa.

Members.— Alfred E. Barlow, D. Sc., F.R.S.C.,
McGill University, Montreal.

A. P. Coleman, Ph.D., F.R.S.,
Professor of Geology, University of Toronto, Toronto.

Théo. C. Denis, B.A. Sc.,
Superintendent of Mines for the Province of Quebec, Quebec.

O. E. LeRoy, B.A., M.Sc.,
Geological Survey, Ottawa.

G. G. S. Lindsey, B.A., K.C.,
27 Manning Arcade, Toronto.

William McInnes, B.A.,
Geological Survey, Ottawa.

Willet G. Miller, LL.D., F.R.S.C.,
Geologist for the Province of Ontario, Toronto.

W. A. Parks, B.A., Ph.D.,
Department of Geology, University of Toronto, Toronto.

J. B. Tyrrell, M.A., F.R.S.C.,
534 Confederation Life Building, Toronto.

Secretary.—W. Stanley Lecky, A.R.S.M.,
Victoria Memorial Museum, Ottawa.

Programme.

It is proposed to hold the meeting of the Congress in Toronto, beginning on or about the twenty-first day of August. The Congress will continue in session for eight days.

Topics for Discussion.

The following topics have been selected by the Executive Committee as the principal subjects for discussion:—

1. The coal resources of the world.
2. Differentiation in igneous magmas.
3. The influence of depth on the character of metalliferous deposits.
4. The origin and extent of the pre-Cambrian sedimentaries.
5. The sub-divisions, correlation and terminology of the pre-Cambrian.
6. To what extent was the Ice Age broken by interglacial periods?
7. The physical and faunal characteristics of the Palæozoic seas with reference to the value of the recurrence of seas in establishing geologic systems.

The Coal Resources of the World.

The Executive Committee of the Eleventh Congress, held in Sweden, compiled and published a comprehensive report on the Iron Ore Resources of the World. The present Executive has undertaken the preparation of a similar monograph on the Coal Resources of the World. In order to make the work as complete as possible the cooperation of all the principal countries of the world has been invited. This invitation has met with a cordial response, and it is hoped the volumes will be ready for distribution before the meeting so that they may constitute a basis for discussion at the Congress.

Excursions.

Arrangements have been made for a series of excursions which will enable the members of the Congress to gain a knowledge of the geology and physiography as well as the mineral and other natural resources of all the more accessible portions of the Dominion of Canada. These excursions will take place before, during and after the meeting of the Congress. Members will be given the opportunity of participating in one or more of the longer in addition to several of the shorter excursions.

A.—Excursions Before the Meeting.

A.1—"Maritime Provinces" (Nova Scotia and New Brunswick) Time 10 days.

This excursion provides for a visit to the maritime provinces of the Atlantic Coast. Some of the chief points of geological interest in this part of Canada are:—the Cambrian section at St. John; the gorge at the Grand Falls on the River St. John, both in the province of New Brunswick; the well known Joggins section of the Carboniferous of Nova Scotia; the gypsum deposits and the oil shales of the Bay of Fundy; and the Carboniferous section in Cape Breton. The coal mines and steel works at Sydney and North Sydney will also be seen. A visit will be made to one of the gold mines in Nova Scotia where the characteristic dome structure is typically developed. On the return journey the Devonian fish beds of Chaleur Bay, Quebec, will be examined. In addition one of the finest Appalachian sections in North America will be seen in the high cliffs of Gaspe.

A.2—Haliburton-Bancroft, Ontario. Time 9 days.

This area lies on the margin of the Laurentian Protaxis of the North American Continent, to the north of Lake Ontario. In this district is exposed the most notable section of the Grenville Series in Canada. The strata show to a remarkable degree the results of progressive metamorphism, as a consequence of the intrusion of extensive batholiths of granite producing various types of amphibolite, etc. This district is also interest-

ing by reason of the very extensive development of nepheline and other alkaline syenites, some of which are of the rarer types. In certain localities these rocks contain an abundance of corundum, while elsewhere sodalite, of a fine depth of colour, is conspicuous. This excursion will also include an inspection of the corundum mines and mills at Craigmont.

A.3—Sudbury-Cobalt-Porcupine, Ontario. Time 12 Days.

These mining areas are situated in the Laurentian Protaxis, northeast of Lake Huron. The Huronian and Keewatin systems are here very typically developed. The chief points of interest are the nickel and copper deposits of Sudbury; the iron mines of Moose Mountain; the silver mines of Cobalt; and the gold-quartz veins of Porcupine.

A.4—Niagara-Iroquois Beach, Ontario. Time 3 Days.

This excursion provides for a visit to the region south and west of Toronto near the shores of Lake Ontario. The Falls of Niagara and the gorge of the Niagara River will be seen. The Silurian sections at Hamilton, and the ancient beach of Lake Iroquois, at Burlington Heights, will also be inspected.

A.5—Asbestos Deposits of the Province of Quebec. Time 3 Days.

The major portion of the world's supply of asbestos comes from the vicinity of Thetford and Black Lake in the Eastern Townships of Quebec. The quarries and mills of this area will be visited and those participating will be enabled to make a brief examination of the characteristic peridotites and resulting serpentines in which the asbestos is developed.

A.6—Anorthosite of Morin, Quebec. Time 1 day.

The object of this excursion is to examine one of the typical anorthosite intrusions of the Laurentian Protaxis. These exposures lie to the north of Montreal in the neighbourhood of St. Jerome.

A.7—The Monteregian Hills, Quebec. Time 2 days.

These constitute a remarkably interesting petrographical province of alkaline rocks in the immediate neighbourhood of Montreal. The nepheline syenite and essexite intrusions, which together with the accompanying dykes and sills of tinguaite, camptonite, etc., form Mount Royal, will be seen the first day. On the second day an excursion will be made to Mount Johnson, an intrusive plug, where a gradual transition from pulaskite to a basic essexite is excellently shown.

A.8—Mineral Deposits of the Ottawa District. Time 3 days.

This excursion will traverse the district to the north of the River Ottawa, between the cities of Montreal and Ottawa, and visits will be made to the principal deposits of mica, graphite and apatite in this area. The Grenville limestone at Lachute, as well as the original Eozoon locality, will be examined.

A.9—Mineral Deposits near Kingston, Ontario. Time 3 days.

The region in the vicinity of Kingston, Ontario, is noteworthy for its deposits of mica, apatite, feldspar, talc, graphite, corundum, pyrite and ores of lead, zinc and iron. It is also famous for the great variety of its mineral species.

A.10—Pleistocene—Montreal and Ottawa. Time 3 days.

This excursion will comprise a visit to the terraces on Mount Royal and the drift deposits at Mile End and elsewhere in the vicinity of Montreal. It will further include, in the neighbourhood of Ottawa, the fossiliferous clays at Green Creek and the terraces on the north side of the Ottawa River.

A.11—Ordovician—Montreal and Ottawa. Time 3 days.

The time will be occupied in an examination of Ordovician formations exposed at various points between the cities of Montreal and Ottawa.

A.12—Southwestern Ontario. Time 3 days.

This excursion, which is of especial interest to palæontologists, provides for the study and collection of Silurian and Devonian fossils. The region embraced lies to the west of Toronto between Lakes Huron and Ontario.

B.—Excursions During the Meeting.

The arrangements provide for short excursions to various localities in the immediate neighbourhood of Toronto. Among others the following places and objects of interest will be visited.

Niagara Falls.

Glacial and Interglacial deposits in the neighbourhood of the Don Valley and at Scarboro Heights.

The Palæozoic formations at Hamilton.

The sandstone quarries of the Credit River.

The morainic deposits north of Toronto.

The Laurentian of the Muskoka region.

The natural gas and oil fields of Ontario.

The highly fossiliferous Palæozoic strata at Streetsville.

The clay deposits and works near Toronto.

C.—Excursions After the Meeting.

Starting from Toronto there will be four transcontinental excursions as follows:—

C.1—Canadian Pacific Railway, (Main Line).

Time 15 days, Toronto to Vancouver, and 5 days returning Vancouver to Toronto or Montreal.

On this excursion the party will travel over the main line of the Canadian Pacific Railway, across the Great Plains and through the Cordilleran Mountain Ranges to the Pacific Ocean.

The participants in this excursion will see the nickel and copper deposits of Sudbury; the Animikie and Keeweenawan formations near Port Arthur; the Laurentian and Keewatin rocks of the Lake of the Woods; the Cretaceous and Tertiary systems of the Great Plains, with the gas wells at Medicine Hat, and the coal mines at Banff, Alberta. Arrangements will also be made for visits to Lake Louise and the Victoria Glacier at Laggan in the Rocky Mountains; the Yoho Valley; Mount Stephen at Field and the great nève at Glacier, British Columbia. The mountains of the Selkirk Range, the Coast Range batholith, and the cañon of the Fraser River are the attractive features of the final stage of the journey to Vancouver.

C.2—Canadian Pacific Railway, (Crowsnest Branch).

Time 15 days, Toronto to Vancouver; and 5 days returning Vancouver to Toronto or Montreal.

Those participating in this excursion will travel over the main line of the Canadian Pacific Railway directly to Medicine Hat in the Province of Alberta. From this point the journey is by way of the Crowsnest branch line passing through the mining centres of Lethbridge, Fernie, Nelson, Rossland and Greenwood to Midway. At Midway the party will be divided, some returning to Nelson and Revelstoke on the main line by way of the Arrow Lakes. The remainder of the party will proceed to Vancouver, passing through a mining region of which the principal places are Hedley, Princeton, Tulameen and Nicola. Between Lethbridge and Fernie sections of the Cretaceous coal measures will be examined. At Frank the party will be given an opportunity of viewing a notable rock slide which occurred in 1903. West of the Kootenay River sections of the pre-Cambrian rocks of the Purcell Range will be examined, also the intrusive contact of the granodiorite at Nelson. The arrangements, moreover, include visits to the gold-copper deposits of Rossland; the gold-quarts veins of Sheep Creek; the copper mines of Phoenix and Greenwood; the silver-lead veins of the Slocan region; and the Nickel Plate gold mine at Hedley. In addition, the Oligocene coal basins at Princeton and Nicola, as well as the diamond-bearing peridotite at Tulameen, will be visited.

C.3—Canadian Northern Railway.

Time 16 days, Toronto to Vancouver; and 5 days returning Vancouver to Toronto or Montreal.

It is arranged that this excursion will cross Lakes Huron and Superior to Port Arthur. Thence the party will proceed by the Canadian Northern Railway across the northern part of the Great Plains to the foothills of the Rocky Mountains. Between Port Arthur and Winnipeg an examination will be made of the Atikokan iron range. A visit will be paid to Steep-rock Lake, where fossils have recently been discovered in rocks of pre-Cambrian age. At Rainy Lake the relations of the Couchiching and Keewatin may be well observed, also examples of post-glacial faulting. In the Province of Manitoba the fossiliferous Ordovician and Devonian limestones will be seen at a number of localities, while at Pir e River outcrops of Cretaceous marls and limestones will be visited. The Red Deer River, in Alberta, a locality rich in dinosaurian remains, will also be examined. From Calgary to Vancouver the party will travel over the main line of the Canadian Pacific Railway.

C.4—Grand Trunk Pacific Railway.

Time 15 days, Toronto to Vancouver; 5 days returning Vancouver to Toronto or Montreal.

Proceeding by way of the Grand Trunk and the Temiskaming and Northern Ontario railways, through the mining camps of Cobalt and Porcupine, the party will arrive at Cochrane and will thence travel over the new transcontinental line of the Grand Trunk Pacific Railway. This line of railway passes north of Lakes Abitibi and Nipigon and south of Lac Seul to Winnipeg, and continues west past Saskatoon and Edmonton and through the Yellow Head Pass of the Rocky Mountains.

Since the construction of the railway to the Pacific Coast will not be completed, the party will return to Edmonton and will thence journey by way of Calgary to Vancouver.

Between Cochrane and Winnipeg outcrops of pre-Cambrian rocks, as well as Glacial and Post-glacial deposits, will be examined at certain typical localities.

Fossil-bearing Cambro-Silurian limestones in the vicinity of Winnipeg; the coal measures at Entwhistle on the Pembina River, west of Edmonton; the coal beds at Carlsbad, and fossil-bearing Devono-Carboniferous limestones in the same locality will be among the interesting features of this excursion. It may also be noted that Mount Robson, the highest peak in the Canadian Rocky Mountains, is observable from the railway. Arrangements, moreover, may be made to descend the Fraser River to Fort George, thence to Ashcroft by automobile and on to Vancouver over the line of the Canadian Pacific Railway.

C.5—Lakes Erie and Huron. **Time 14 Days.**

The excursion through Lakes Ontario, Erie and Huron will include a visit to Niagara Falls. An opportunity also will be given for the collection and study of fossils from the Onandaga formation at Port Colborne and the Utica formation at Collingwood. In addition a visit will be made to Manitoulin Island where there are noteworthy sections of Ordovician and Silurian strata with characteristic fossils. At Pelee Island the quarries with their Devonian fossils will also be inspected.

The Archean formations and their dependent topography, as well as the very pronounced, unconformable contact between these old crystalines and the Palæozoic, are well exemplified in the Georgian Bay district, which is included in the arrangements. Walpole Island, on which there is an Indian settlement, will also be visited. This excursion gives an excellent opportunity for stratigraphic, glacial and physiographic studies.

C.6—Sudbury-Cobalt-Porcupine, Ontario. **Time 12 days.**

The arrangements for this excursion are similar in all respects to those enumerated under the classification "A.3.", save only that in this instance the starting point will be Toronto instead of Montreal. If necessary, provision will be made for yet another excursion to the mining regions of Northern Ontario.

C.7—Vancouver Island. **Time 4 days.**

Starting from Vancouver, the excursion comprises a journey by steamer to Victoria, the capital of the Province of British Columbia, and thence by rail to Nanaimo, an important coal mining centre on Vancouver Island. There will be opportunity en route to observe examples

of peneplanation, glacial erosion and metamorphism. After visiting the coal mines and observing the coal measures at Nanaimo, the party will return to Victoria by rail.

C.8—Yukon and Northern British Columbia. Time 23 days.

Starting from Vancouver, the journey will be made by water to Skagway, Alaska, by rail over the White Horse Pass, and thence by steamboat down the Yukon River to Dawson City. The party will visit the Klondike gold fields, the Lewes River Valley, the Whitehorse copper district in the Yukon Territory, the Llewellyn Glacier, the Atlin gold mining district, the Skeena River mining regions, and the Portland Canal copper deposits in Northern British Columbia. A visit will also be paid to the copper and iron deposits on Texada Island in the Gulf of Georgia. The scenery on the mainland coast and islands to be observed on the passage to and from Skagway is exceptionally beautiful.

C.9—Prince Rupert and Skeena River, B.C. Time 8 days.

Starting from Vancouver, this excursion permits of a sea voyage of five hundred miles along the west coast of British Columbia, which is notable for its mountains and fiords. From Prince Rupert, the terminus of the Grand Trunk Pacific Railway, the journey will be made by rail up the Skeena River Valley to Hazelton.

C.10—Athabasca and Peace River, Alberta. Time 13 days.

This excursion is timed for a departure from Edmonton, coinciding with the arrival of those participating in the excursions "C. 3" and "C.4."

Provisional arrangements have been made as follows. The party will proceed from Edmonton to Athabaska Landing by rail, thence down the Athabaska River to Grand Rapids and Fort McMurray; and, if deemed advisable, a steamer may be chartered on to Athabaska Lake, up Peace River to Vermilion Falls; also across Athabaska Lake and down Slave River to Slave River Rapids. Economic interest in this excursion centres mainly in the area of Tar Sands along the Athabaska River. There are, for many miles, continuous exposures of Cretaceous rocks along the upper portions of both rivers, and flat-lying Devonian limestones along the lower.

Guide Books.

Guide books for use on the excursions are now in the course of preparation.

Expenses.

A definite statement of the cost of each excursion will be issued later. Meanwhile the following generalizations may be of some practical value:—

From Europe to Toronto, via Quebec or Montreal, the cost of a ticket for the single return journey will range between $125.00 and $350.00 according to the steamer selected and the accommodation desired.

In the larger Canadian cities the charges at hotels for board and lodging vary from $2.50 per day and upward but less expensive accommodation is obtainable at boarding houses in these cities, as well as at hotels in the smaller towns to be visited.

For the ten days of the meeting in Toronto special accommodation will be provided by the University, at a cost of about $2.00 per diem.

The value of the Canadian dollar in currencies of other countries is shown in the following table:—

One dollar = Five francs, French.
" " = Four shillings, English.
" " = Four marks, German.
" " = Three kroner, seventy ore, Sweden.
" " = Five crowns, Austrian.

The active cooperation and sympathy of the various railway and steamship lines has already been generously offered.

Correspondence.

The Secretary will be pleased to answer all enquiries regarding the arrangements for the Congress. Correspondence should be addressed as follows:—

The Secretary, International Geological Congress,
Victoria Memorial Museum, Ottawa, Canada.

Cable address:—GEOCONG, OTTAWA. Messages may be sent in any of these codes:—

A.B.C. 5th, Lieber, Bedford McNeill, 1908.